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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/456,230	12/07/99	WAKAYAMA M	36159/JWE/B6

EXAMINER

MM91/0713

CHRISTIE PARKER AND HALE LLP
P O BOX 7068
PASADENA CA 91109-7068

ART UNIT	PAPER NUMBER
2816	8

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/456,230	Applicant(s) WAKAYAMA ET AL.	
	Examiner Quan Tra	Art Unit 2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 June 2001* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3,8-11 and 19-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3, 8-11, 19-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

This office action is in response to the amendment filed 6-8-2001.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 3, 8-11 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghoshal (USP 5068628) in view of Hsu (USP 5805003) and Barrett et al. (USP 5243599).

As to claim 8, Ghoshal shows in figure 2 a phase lock loop comprising: a detector (76) for comparing a phase or frequency characteristic of an input signal (26) to a phase or frequency characteristic of a timing reference signal (74); a timing reference signal generator (46, 48,..., 56, 78), connected in feedback fashion to provide a timing reference signal to the detector. Thus, figure 2 shows all elements of the claim except for the timing reference signal generator is operatively configured to produce an output signal at a characteristic frequency an integral multiple of a desired output clock frequency. However, Hsu shows in figure 1 a frequency divider circuit (/M) for reducing the output frequency. Therefore, it would have been obvious to one having ordinary skill in the art to add a frequency divider circuit to the output of Ghoshal's figure 2 for the purpose of reducing the output frequency. Thus, the reference of Ghoshal's figure 2 and Hsu's figure 1 show all elements of the claim 8 except for the phase select MUX is a Gray code MUX. However, Barrett et al. shows in figure 3 a Gray code MUX with the advantage of providing faster control path than other types of decode devices. Therefore, it

would have been obvious to one having ordinary skill in the art to employ the teaching of Barrett et al. in to the Ghoshal's MUX for the purpose of having faster control path.

As to claim 3, Ghoshal's figure 2 shows block 76 further comprises a loop filter.

As to claims 9, Barrett et al.'s figure 3 shows the phase control word has a characteristic width J, where J is mathematically dependent on the frequency scale factor M.

As to claim 10, it is seen as an obvious design choice for selecting frequency divider circuit to be constructed of current mode logic components dependent upon particular environment of use to ensure optimum performance.

As to claim 11, it is seen as an obvious design choice for selecting phase control MUX to be constructed of current mode logic components dependent upon particular environment of use to ensure optimum performance.

Claims 21 and 22 recite similar limitations of claims 8-11. Therefore, they are rejected for the same reasons.

As to claim 19, the reference of Ghoshal and Hsu teach the number of phases represented by the multi-phase output signals are reduced by a scale factor M from a number of phases produced by a timing reference signal generator operating at a characteristic frequency substantially equal to a desired output clock frequency.

As to claim 20, Ghoshal's figure 2 shows a phase select MUX (78), the phase select MUX selecting between and among the multi-phase signals to define a respective one as an output clock signal.

Response to Arguments

3. Applicant's arguments have been fully considered but they are not persuasive. Applicant states that "the present invention provides a phase lock loop configured to reduce jitter... Further, in accordance with the present invention there is no need to have a MUX for faster control path as suggested by the Examiner". The examiner respectfully disagrees with that statement. It is consider as a intended use for the phase "for reducing jitter when the phase control word change states" in claims 8 and 21. Furthermore, with the combination of the teaching of Ghoshal, Hsu , and Barrett et al.'s references, it is inherent for the phase locked loop to reduce jitter as the phase control word change states. Goshal's figure 2 shows a Mux (78) selecting between and among multiphase signals (58, 60, ..., 68) Barrett et al.'s figure shows a gray code Mux for improving the speed of the control path. Therefore, it is seen as an obvious to one having ordinary skill in the art to use the Gray code Mux in Ghoshal's figure 2 for the purpose of improving the speed of the control path.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. These references are cited as interest because they show some circuits analogous to the claimed invention.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan Tra whose telephone number is 703-308-6174. The examiner can normally be reached on 8:00 A.M.-5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on 703-308-4876. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

QT
July 11, 2001

Terry D. Cunningham
Primary Examiner